

Flexible Screen Propellant Management Device for Near Term In-Space Demonstration, Phase I

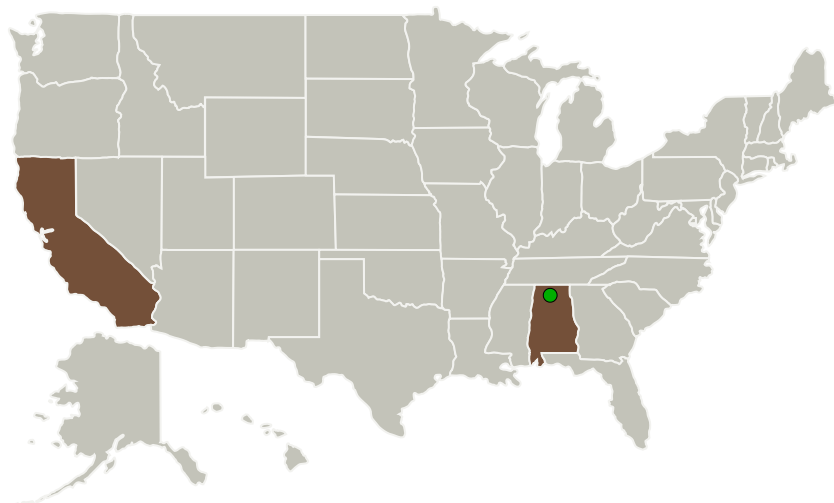
Completed Technology Project (2011 - 2011)



Project Introduction

While evaluating lunar ascent and descent stage propellant acquisition options in 2008 and 2009 for NASA GRC, IES conceived a novel, flexible screen propellant management device (PMD). The concept provides a highly simplified and easy to build PMD as an alternative to a total communication device or one incorporating a start basket. Water bench tests with a very primitive prototype yielded encouraging results, and additional, simple bench-level testing with LN2 was also encouraging. An opportunity exists to refine the concept, develop a larger, more flight-like apparatus, and test it in a cryogenic tank currently being designed and subsequently intended for use on the Cryogenic Orbital Testbed (CRYOTE) experiment. Designing a full size flight qualifiable flexible screen PMD under a Phase 1 SBIR effort, followed by hardware fabrication, qualification and flight demonstration on a flight test platform concurrently in development, will allow this concept to be demonstrated for a fraction of the cost that would be required for a dedicated flight of a flexible PMD experiment. The concept TRL should move from 3 to 5 during Phase 1, and 5 to 7 during Phase 2.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Innovative Engineering Solutions	Lead Organization	Industry	Murrieta, California
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	California

Project Transitions

▶ **February 2011:** Project Start

✓ **September 2011:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138169>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Innovative Engineering Solutions

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

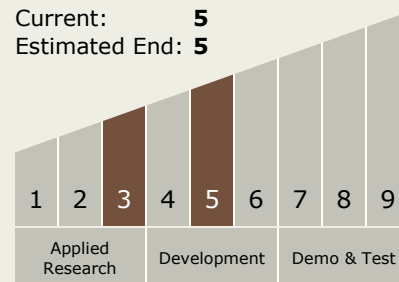
Mark A Wollen

Technology Maturity (TRL)

Start: 3

Current: 5

Estimated End: 5



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.2 Electric Space Propulsion
 - └ TX01.2.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System